UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,277	02/19/2002	Adnan Kavak	SAMS01-00171	3424

23990 7590 04/04/2007		EXAMINER
DOCKET CLERK		MILLS, DONALD L
P.O. DRAWER 800889		
DALLAS, TX 75380	ART UNIT	PAPER NUMBER
	2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	**Applicant(s)**
Office Action Summary	10/078,277	KAVAK ET AL.
	Examiner	**Art Unit**	
	Donald L. Mills	2616	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>26 December 2006</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-3,6,9-13,16 and 19-24</u> is/are rejected.

7)☒ Claim(s) <u>4,5,7,8,14,15,17 and 18</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1-3, 6, 9-13, 16, and 19-24 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chheda (US 6,996,056 B2) in view of Saunders (6,031,877).

        Regarding claims 1, 11, and 21, Chheda discloses a method and apparatus for orthogonal

code management in CDMA system using smart antenna technology, which comprises:

        A database capable of storing R active wireless terminal records, each said R active

wireless terminal records containing: an active orthogonal code used to communicate with one

of said wireless access terminals (Referring to Figures 2 and 3B, a cell includes a base station

transceiver system **204** that communicates with mobile stations utilizing CDMA in which

communication channels between the BTS and each mobile station is created by one of a group

of orthogonal codes (stored) using smart beamforming antennas with preselected coefficients.

See column 5, lines 14-17; column 8, lines 49-54; and column 11, lines 17-29;) and

        Chheda does not disclose the *controller associated with said database capable of*

receiving a notification that a new wireless access terminal is accessing said base station and, in

response to said notification, comparing said each of said R active wireless terminal records to

new downlink beamforming coefficients suitable for forming a downlink transmit beam for

transmitting to said new wireless access terminal and, in response to said comparison,

determines at least one active wireless terminal record containing corresponding downlink

beamforming coefficients that have the least correlation with said new downlink beamforming

coefficients.

Saunders teaches an apparatus and method for adaptive beamforming in an antenna array

which stores received information with a predictive filter that predicts the future transmission;

combines the previously received information; and the predicted information to generate

beamforming coefficients for weighting information to be transmitted subsequently from the

array of adaptive antenna elements (See column 2, lines 49-63.)

It would have been obvious to one of ordinary skill in the art at the time of the invention

to implement the adaptive beamforming of Saunders in the system of Chheda. One of ordinary

skill in the art at the time of the invention would have been motivated to do so in order to adjust

the beamforming coefficients of Chheda's antenna array (See column 8, lines 60-64) in an

efficient and straightforward manner as taught by Chheda (See column 1, lines 29-43.)

Regarding claims 2, 12, and 22, the primary reference further teaches *wherein said*

controller assigns an active orthogonal code in said at least one active wireless terminal record

to be used in downlink transmissions to said new wireless access terminal (Referring to Figures

3A, 3B, and 3C, a mobile station is traveling into zone 2 and is requiring an orthogonal code to

create a communication channel with BTS **302**. Since there are no unused orthogonal codes that

are available for creating a communication channel with the mobile station **304** an orthogonal

code is reused by the mobile station with corresponding beamforming coefficients. See column

12, lines 11-20; column 12, lines 1-11; and column 11, lines 17-29.)

Regarding claims 3, 13, and 23, the primary reference further teaches *wherein said base station uses up to K orthogonal codes for said downlink transmission and said controller compares said each of said R active wireless terminal records to said new downlink beamforming coefficients in response to a determination that all of said K orthogonal codes are in use* (Referring to Figures 3A, 3B, and 3C, a mobile station is traveling into zone 2 and is requiring an orthogonal code to create a communication channel with BTS **302**. Since there are no unused orthogonal codes that are available for creating a communication channel with the mobile station **304** an orthogonal code is reused by the mobile station with corresponding beamforming coefficients. The table tracks all antennas as well as tracking the beamwidth. See column 12, lines 11-20; column 12, lines 1-11; and column 11, lines 17-29.)

Regarding claims 6, 10, 16, and 20 as explained above in the rejection statement of claims 1 and 11; Chheda and Saunders teach all of the claim limitations of claims 1 and 11 (parent claims). Chheda further teaches *wherein said base station is operable to communicate in S sectors of a cell site associated with said base station and said base station uses up to K orthogonal codes in each of said S sectors for said downlink transmissions* (Referring to Figures 3A, 3B, and 3C, a mobile station is traveling into zone 2 and is requiring an orthogonal code to create a communication channel with BTS **302**. Since there are no unused orthogonal codes that are available for creating a communication channel with the mobile station **304** an orthogonal code is reused by the mobile station with corresponding beamforming coefficients. The table tracks all antennas as well as tracking the beamwidth to track interference. See column 12, lines 11-20; column 12, lines 1-11; and column 11, lines 17-29.)

Chheda does not disclose *wherein said controller compares said each of said R active wireless terminal records to said new downlink beamforming coefficients in response to a determine that all of said K orthogonal codes are in use in a first sector in which said new wireless access terminal is accessing said base station.*

Saunders teaches an apparatus and method for adaptive beamforming in an antenna array which stores received information with a predictive filter that predicts the future transmission; combines the previously received information; and the predicted information to generate beamforming coefficients for weighting information to be transmitted subsequently from the array of adaptive antenna elements (See column 2, lines 49-63.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the adaptive beamforming of Saunders in the system of Chheda. One of ordinary skill in the art at the time of the invention would have been motivated to do so in order to adjust the beamforming coefficients of Chheda's antenna array (See column 8, lines 60-64) in an efficient and straightforward manner as taught by Chheda (See column 1, lines 29-43.)

Regarding claims 9 and 19 as explained in the rejection statements of claims 1 and 11, Chheda and Saunders teach all of the claim limitations of claims 1 and 11 (parent claims).

Chheda does not disclose *wherein said controller receives said new downlink beamforming coefficients from a beamforming controller that determines said new downlink beamforming coefficients from an uplink signal transmitted by said new wireless access terminal.*

Saunders teaches an apparatus and method for adaptive beamforming in an antenna array which stores received information with a predictive filter that predicts the future transmission;

combines the previously received information; and the predicted information to generate

beamforming coefficients for weighting information to be transmitted subsequently from the

array of adaptive antenna elements (See column 2, lines 49-63.)

It would have been obvious to one of ordinary skill in the art at the time of the invention

to implement the adaptive beamforming of Saunders in the system of Chheda. One of ordinary

skill in the art at the time of the invention would have been motivated to do so in order to adjust

the beamforming coefficients of Chheda's antenna array (See column 8, lines 60-64) in an

efficient and straightforward manner as taught by Chheda (See column 1, lines 29-43.)

Allowable Subject Matter

3.   Claims 4, 5, 7, 8, 14, 15, 17, and 18 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Response to Arguments

4.   Applicant's arguments filed 26 December 2006 have been fully considered but they are

not persuasive.

Rejection Under 35 USC 103

On page 10 of the remarks, regarding claims 1, 11, and 21, the Applicant argues neither

Chheda nor Saunders discloses, teaches, or otherwise makes obvious *a database capable of*

storing R active wireless terminal records, each said R active wireless terminal records

containing: an active orthogonal code used to communicate with one of said wireless access

terminals. The Examiner respectfully disagrees. The claims are read with a broad reasonable

literal interpretation, and claims are read in light of the specification without reading limitations

from the specification into the claims. Chheda disclose a cell which includes a base station

transceiver system **204** that communicates with mobile stations utilizing CDMA in which

communication channels between the BTS and each mobile station is created by one of a group

of orthogonal codes (equivalent to a database storing terminal records) using smart beamforming

antennas with preselected coefficients (equivalent to an active orthogonal code used to

communicate with one of the terminals) (See column 5, lines 14-17; column 8, lines 49-54; and

column 11, lines 17-29.) Therefore, Chheda teaches obvious *a database capable of storing R*

active wireless terminal records, each said R active wireless terminal records containing: an

active orthogonal code used to communicate with one of said wireless access terminals. In

response to Applicant's arguments against the references individually, as stated on page 11 of the

remarks regarding the argument that Chheda does not mention beamforming coefficients at all,

one cannot show nonobviousness by attacking references individually where the rejections are

based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA

1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

On page 13 of the remarks, regarding claims 1, 11, and 21, the Applicant argues neither

Chheda nor Saunders discloses, teaches, or otherwise makes obvious the *controller associated*

with said database capable of receiving a notification that a new wireless access terminal is

accessing said base station and, in response to said notification, comparing said each of said R

active wireless terminal records to new downlink beamforming coefficients suitable for forming

a downlink transmit beam for transmitting to said new wireless access terminal and, in response

to said comparison, determines at least one active wireless terminal record containing

corresponding downlink beamforming coefficients that have the least correlation with said new

downlink beamforming coefficients. The Examiner respectfully disagrees. Saunders teaches an

apparatus and method for adaptive beamforming in an antenna array which stores received

information (database) with a predictive filter that predicts the future transmission; combines the

previously received information (comparing the records to new downlink beamforming

coefficients); and the predicted information to generate beamforming coefficients for weighting

information to be transmitted subsequently from the array of adaptive antenna elements

(corresponding downlink beamforming coefficients that have the least correlation) (See column

2, lines 49-63.) Therefore, Saunders teaches the *controller associated with said database*

capable of receiving a notification that a new wireless access terminal is accessing said base

station and, in response to said notification, comparing said each of said R active wireless

terminal records to new downlink beamforming coefficients suitable for forming a downlink

transmit beam for transmitting to said new wireless access terminal and, in response to said

comparison, determines at least one active wireless terminal record containing corresponding

downlink beamforming coefficients that have the least correlation with said new downlink

beamforming coefficients.

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Donald L. Mills whose telephone number is 571-272-3094. The

examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donald L Mills

Dem

March 28, 2007

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